

CLAIMS

1. An apparatus for alerting a motor vehicle operator that tension of a motor vehicle seat belt is within a predetermined range, and adapted to be fastened to the seat belt, the seat belt having a first and second web surface, the apparatus comprising:

---

first and second members contacting the first web surface of the seat belt;

a third member located between the first and second members and contacting the second web surface of the seat belt, the third member providing a response to the tension of the seat belt;

a force sensing device coupled to the third member, the device being adapted to alert the operator when the response of the third member corresponds to the tension of the seat belt being within the predetermined range.

2. The apparatus according to Claim 1, the force sensing device including an element adapted to sense a torsional load applied to in the third member, the torsional load being created in response to the tension of the seat belt.

3. The apparatus according to Claim 2, the force sensing device including a printed circuit board in communication with the element.

4. The apparatus according to Claim 1, wherein the first, second, and third members cooperate to form an S-Clip.

5. The apparatus according to Claim 4, wherein the S-clip forms a tooth to retain the seat belt.

6. The apparatus according to Claim 4, wherein the first member forms a first leg of the S-clip, the second member forms a second leg of the S-clip, the third member forms a center section of the S-clip.

---

7. The apparatus according to Claim 1, the force sensing device including a light to provide a visual alert to the operator when the tension is within the predetermined range.

8. The apparatus according to Claim 1, the force sensing device including a tone generator to provide an audible alert to the operator when the tension is within the predetermined range.

9. The apparatus according to Claim 1, the force sensing device including a manual input in communication with an integrated circuit to indicate when a reference tension is applied to the apparatus.

10. The apparatus according to Claim 1, the force sensing device including a biasing member coupled to the third member.

11. The apparatus according to Claim 1, wherein the third member is displaced in response to the tension in the seat belt.

12. The apparatus according to Claim 1, wherein the first member includes a roller for contacting the seat belt.

13. The apparatus according to Claim 1, wherein the third member is comprised of a pin assembly having a rounded head to contact the seat belt.

---

14. The apparatus according to Claim 1, wherein the third member includes a roller for contacting the seat belt.

15. The apparatus according to Claim 1, wherein the first, second, and third members include rollers contacting the seat belt.

16. The apparatus according to Claim 1, wherein the device includes a visual indicator to alert the operator when the third member is displaced corresponding to a tension of the seat belt within the predetermined range.

17. The apparatus according to Claim 16, wherein the visual indicator includes a scale corresponding to a plurality of tension conditions.

18. The apparatus according to Claim 1, wherein the first, second, and third member are oriented in an S shaped configuration.

19. An apparatus for alerting an operator a tension of a seat belt is within a predetermined range, the seat belt having a first and second web surface, the apparatus comprising:

a first member contacting the first web surface of the seat belt;

a second member contacting the first web surface of the seat belt;

---

a third member located between the first and second members and contacting the second web surface of the seat belt, the third member having a response to a tension in the seat belt;

a device coupled to the third member, the device being adapted to alert an operator when the response of the third member corresponds to the tension of the seat belt being within the predetermined range, the device including an element adapted to sense a torsional load in the third member, the torsion being created in response to the tension of the seat belt.

20. The apparatus according to Claim 19, wherein the first, second, and third members cooperate to form an S-Clip.

21. The apparatus according to Claim 20, wherein the S-clip has a tooth to retain the seat belt.

22. The apparatus according to Claim 20 wherein the first member includes a first leg of the S-clip, the second member includes a second leg of the S-clip, the third member includes a center section of the S-clip.

23. The apparatus according to Claim 20, the device including a printed circuit board in communication with the element.

24. The apparatus according to Claim 20, the device including a light to provide a visual alert to the operator when the tension is within the predetermined range.

---

25. The apparatus according to Claim 20, the device including a tone generator to provide an audible alert to the operator when the tension is within the predetermined range.

26. The apparatus according to Claim 20, the device including a manual input to indicate when a reference tension is applied to the apparatus.

27. An apparatus for alerting an operator a tension of a seat belt is within a predetermined range, the seat belt having a first and second web surface, the apparatus comprising:

a first member contacting the first web surface of the seat belt;

a second member contacting the first web surface of the seat belt;

a third member located between the first and second members and contacting the second web surface of the seat belt, the third member being displaced in response to a tension in the seat belt;

a device coupled to the third member, the device being adapted to alert an operator when the displacement of the third member corresponds to the tension of the seat belt being within the predetermined range.

28. The apparatus according to Claim 27, the device including a biasing member coupled to the third member.

---

29. The apparatus according to Claim 27, wherein the biasing member biases the third member against the seat belt.

30. The apparatus according to Claim 27, wherein the first member includes a roller for contacting the seat belt.

31. The apparatus according to Claim 27, wherein the third member includes a rounded head to contact the seat belt.

32. The apparatus according to Claim 27, wherein the third member includes a roller for contacting the seat belt.

33. The apparatus according to Claim 27, wherein the first, second, and third members include rollers.

34. The apparatus according to Claim 27, the device including a visual indicator to alert the operator when the third member is displaced a distance corresponding to a tension of the seat belt within the predetermined range.

35. The apparatus according to Claim 27, the visual indicator including a scale corresponding to a plurality of tension conditions.

---